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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,723	02/21/2007	Julie Marie Wichert	70252/UST	2197

26748 7590 04/15/2008  
SYNGENTA CROP PROTECTION, INC.  
PATENT AND TRADEMARK DEPARTMENT  
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GREENSBORO, NC 27409

EXAMINER
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NWAONICHA, CHUKWUMA O

ART UNIT	PAPER NUMBER
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1621

MAIL DATE	DELIVERY MODE
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04/15/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,723	<b>Applicant(s)</b> WICHERT ET AL.	
	<b>Examiner</b> CHUKWUMA O. NWAONICHA	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***DETAILED ACTION***

***Current Status***

1. Claims 1-15 are pending in the application.

***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11-13 recite the limitation method in line 1 of claim 11. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim** 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Javdani et al., {US 7,285,678, same as WO 2002076934} in view of Ueda et al., {US 4,937,386}.

Applicants' claim a process for the preparation of mesotrione and reduction of the levels of undesirable impurities in a mesotrione sample; wherein all the variables are as defined in the claims.

**Determination of the scope and content of the prior art (M.P.E.P. §2141.01)**

Javdani et al. teach a process for the preparation of mesotrione and reduction of the levels of undesirable impurities in a mesotrione sample in the presence of activated carbon, cyanide catalyst and a pH of about 2 to 10. See column 3, lines 8-36.

On the other hand, Ueda et al. teach a process for the preparation of 4,4,5-trimethyl-2-(2-nitro-4-methylsulfonylbenzoyl) cyclohexane-1,3-dione which is useful as herbicide and reduction of the levels of undesirable impurities in the compound. See column 3, example 1.

**Ascertainment of the difference between the prior art and the claims (M.P.E.P. §2141.02)**

Applicants' claimed process is directed to the preparation of mesotrione and reduction of the levels of undesirable impurities in a mesotrione sample by crystallization. The instant claims differ from the prior art reference of Javdani et al. with respect to purification step involving for the crystallization of NMSBA. However, Ueda

et al. teach a process for the purification of 4,4,5-trimethyl-2-(2-nitro-4-methylsulfonylbenzoyl) cyclohexane-1,3-dione, which is a homolog of mesotrione.

**Finding of prima facie obviousness--rational and motivation (M.P.E.P. §2142-2143)**

The instant claimed process for the preparation of mesotrione and reduction of the levels of undesirable impurities in a mesotrione sample is taught to select the processes of Javdani et al. and Ueda et al.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the process conditions as taught by Javdani et al. and Ueda et al. to arrive at the instantly claimed process for the preparation of mesotrione and reduction of the levels of undesirable impurities in a mesotrione sample. Said person would have been motivated to practice the teaching of the references cited because mesotrione is useful as herbicide. The Examiner notes that the formation of enolate is an intermediate product the reaction of cyclohexanedione with 2-nitro-4-methylsulphonyl benzoyl chloride (NMSBC) and not a patentable distinction. It should be noted that the purification process claimed by Applicants is a well known technique in organic chemistry as a means of eliminating impurities from organic samples and do not constitute a patentable distinction.

Moreover, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/598,993 in view of Benke et al. This is a provisional obviousness-type double patenting rejection.

The presently claimed process for reducing the levels of undesirable impurities in a mesotrione sample is disclosed in U.S. Appl. No. 10/598,993.

Applicants claim a process for reducing the levels of undesirable impurities; wherein all the variables are as defined in the claims while Application No. 10/598,993 teaches a process for reducing the cyanide levels; wherein all the variables are as defined in the claims. See claims 1-8 of Application No. 10/598,993.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the claims overlaps substantially with the scope of claims 1-8 in the copending Application No. 10/598,993, and the process for reducing

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the levels of undesirable impurities of the presently claim invention encompasses the process for reducing the cyanide levels in the copending Application No. 10/598,993. The instant claims for removing **undesirable impurities** from mesotrione sample differ from the claims in the copending Application No. 10/598,993 in that the claims in the copending Application No. 10/598,993 is narrower in scope. This difference is not a patentable distinction because Application No. 10/598,993 teaches the elements of the claimed invention with sufficient guidance, particularity, and with a reasonable expectation of success, that the invention would be *prima facie* obvious to one of ordinary skill in the art.

#### ***Allowed Claims***

Claims 14 and 15 are allowable over the prior art of record.

#### ***Reason For Allowance***

The following is an examiner's statement of reasons for allowance: A search of the prior art failed to uncover any reference that anticipates or renders obvious a process for preparing mesotrione by oxidation of NMST to give crude NMSBA, conversion of NMSBA to NMSBC, reacting cyclohexanedione with NMSBC to form an enol ester followed by a rearrangement process to give mesotrione, a distillation step, one or more purification steps and crystallisation of mesotrione as claimed by applicants.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is

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571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne (Bonnie) Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chukwuma O. Nwaonicha/  
Examiner, Art Unit 1621

/Jafar Parsa/  
Primary Examiner, Art Unit 1621  
April 11, 2008